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mandible and the hyoid arch and whose morphological relations seem to be the same as those of the mammalian chorda. The editors announce the addition of Dr. Lewellys F. Barker, of the University of Chicago and Rush Medical College, to the staff of editorial collaborators.

IN an article entitled 'The Recent Development of Method in Theoretical Physics,' published in the January *Monist*, Professor Ludwig Boltzmann, formerly of Vienna but now of the University of Leipsic, has presented a trenchant criticism of the philosophical tendencies now dominating physical research. Professor Boltzmann is an outspoken votary of the classical or atomistic physical philosophy which culminated in the labors of Faraday and Maxwell; and after rapidly sketching the rise and development of the mechanical philosophy he proceeds to subject to searching scrutiny the views of the energeticians (Ostwald, Helm, etc.) and the phenomenologists (Kirchhoff and Mach). While not underrating the achievements of either of these two recent schools of physical theory, he asserts that the early acquisitions of the atomistic inquirers could never have been reached by energetics or by phenomenology. To the same number of *The Monist*, MM. Vaschide and Piéron, of Paris, France, have contributed an erudite article on 'Prophetic Dreams in Greek and Roman Antiquity,' for which they have collected from the original sources all the data in the ancient writings relating to oneirology. The remaining articles are an 'Introduction to a Psychological Study of Religion,' by Professor James H. Leuba, and 'Jew and Gentile in Early Christianity,' by Dr. Paul Carus.

THE December number of the *American Geologist* contains the following articles: 'Notes on the Geology and Petrography of Monhegan Island, Maine,' by E. C. E. Lord of Washington, D. C. The works are described as granitic, containing feldspar, olivine, pyroxene and hornblende. The rocks are analyzed petrographically and chemically and compared with rocks from other districts. The mass is frequently crossed by acid and basic dykes which are described and analyses given. 'The Mineralogical and Petrographic Study of the Gabbroid Rocks

of Minnesota,' by N. H. Winchell, contains Chapters VIII. to X. inclusive and concludes the series. Chapter VIII. contains a discussion of Quartz Gabbro, in which is given the minerals and their occurrence together with their chemical composition. Chapter IX., Silico ferrolyte, contains a discussion of a rock extremely rich in magnetite containing numerous grains of quartz. This name has been proposed by Mr. Winchell to distinguish the rock from the ferrolyte of Wadsworth, which it resembles. Chapter X., 'Résumé and Conclusions,' contains discussions of the comparative petrography, the mineralogical and chemical composition of the various types of rock studied in the preparation of the report. Next is an interesting article on 'Meteorology of the Ordovician,' by F. W. Sardeson, which is followed by the usual editorial comments, a review of recent geological literature and personal and scientific news.

DR. A. DE WATTEVILLE has resigned the editorship of *Brain*. When accepting his resignation the Council adopted the following resolution: "The Council accepts with great regret Dr. de Watteville's resignation of the editorship of *Brain*, and desires to take this opportunity of recording the deep debt of gratitude that the Society owes him for the way in which he has conducted the Journal for the past twenty years. The Council feels that parting with Dr. de Watteville is an event of great moment to the Society, for he has not only brought *Brain* to a high standard of perfection and secured for it a great European reputation, but even the existence of the Journal at the present time is due to his energetic action at a critical juncture in 1880. Moreover, the Council is mindful that the Society itself took origin on Dr. de Watteville's initiative, at a meeting held at his house, on November 14, 1885."

SOCIETIES AND ACADEMIES.

GEOLOGICAL SOCIETY OF WASHINGTON.

AT the eighth annual meeting, held December 19, 1900, the following officers were elected for the ensuing year:

President, J. S. Diller; *Vice-Presidents*, C. W. Hayes and G. P. Merrill; *Treasurer*, M. R. Campbell; *Secretaries*, David White and F. L.

Ransome. *Members-at-large of the Council,* Bailey Willis, A. H. Brooks, W. Lindgren, G. O. Smith, T. W. Stanton.

The address of the retiring president, Mr. Whitman Cross, on 'The Development of Systematic Petrography in the Nineteenth Century' was delivered in connection with this meeting.

At the 108th regular meeting, held January 9, 1901, the following papers were presented:

N. H. DARTON: *Comparison of Stratigraphy of the Black Hills with that of the Front Range of the Rocky Mountains.*

After several years of detailed investigation of the stratigraphy of the Black Hills in South Dakota and Wyoming, a preliminary examination has recently been made of the region southwest to and along the front ranges of the Rocky Mountains across Wyoming and Colorado. The Black Hills are due to a local expansion of a branch of the Laramie range, but the connection underlies a country in great part covered by Tertiary deposits. In the vicinity of Hartville, about 125 miles southwest of the Black Hills, there is a local uplift on this line, affording extensive exposures of formations from the crystalline schists part way up the Mesozoic column. The stratigraphy is here very similar to that of the Black Hills, and all the principal formations from Lower Cretaceous sandstones to the Lower Carboniferous limestone can be distinctly recognized. Along the flanks of the Laramie range, and southward into Colorado, the formations present considerable change, but numerous features of close relationship were observed. In the fine sections at Morrison, west of Denver, there was found an extension of the Purple (Minnekahta) limestone of the Black Hills, having precisely similar stratigraphic relations in the Red beds, and containing some of the same Permian fossil, although these are scarce and not well preserved. The limestone was traced south for a considerable distance and found to merge into a sandy bed which was finally lost in the great mass of coarse red deposits in the vicinity of the Garden of the Gods. Its very distinct occurrence at Morrison affords the means for a precise correlation with the Black Hills region. The underlying mass of coarse sandstone lying

against the crystalline rocks represent portions or perhaps all the Carboniferous formations of the Black Hills. The Red beds overlying this Minnekahta limestone at Morrison are gypsumiferous shales similar to those of the Red Valley encircling the Black Hills. The Morrison formation lying next above, is, as previous observers have pointed out, the equivalent of the Alantosaurus (Beulah) shales and the marine Jurassic which was traced as far south as the Hartville region, is lacking in the Morrison section. The lower Cretaceous sandstone in the Black Hills has not been recognized in Colorado. The Benton formation presents the same three divisions through the Black Hills region as were determined by Gilbert in southern Colorado. In the valley of the Purgatoire in southern Colorado the Red bed series are represented by red sandstones of moderate coarseness, in the upper bed of which was discovered a bone of a Bolodont which is thought to be of Triassic age. The overlying series of gypsum, limestone, and shale yielded no fossils, but probably comprises a representative of the Morrison formation, for its upper part it least has all the characteristic features of the Alantosaurus shale. It is overlain by so-called Dakota sandstone.

ALFRED H. BROOKS and ARTHUR J. COLLIER: *Glacial Phenomena of the Seward Peninsula.*

The Seward Peninsula, stretching out toward the Siberian coast from northwestern Alaska, separates the Arctic Ocean from Bering Sea.

It consists, topographically, of low, rounded hills whose gentle slopes are often broken by well-marked benches. Above this upland, rise three notable mountain masses. The Kiglowaik range, whose highest peaks reach an elevation of 4,500 feet, is a rugged mountain mass lying some 30 miles north of Nome. To the northeast of this range is another mountain mass, which, extending to the northeastward for some 30 miles, sweeps around the headwaters of Fish River, and joins the mountains east of Golofnin Bay. The York Mountains, the third mountain mass, extend inland from Cape York.

In this region there is no evidence of general glaciation. In fact, there is positive proof

against it. The three mountain masses have, however, as shown by studies of the past season, been centers of local glaciation. In the Kiglow-aik range the valleys are glaciated to an elevation of 500 feet above the valley floor, and the moraines marking the limits of this glaciation were deposited close to tide-water. The evidence of ice action consists of cirques, U-shaped valleys, morainic topography, and glacial erratics. Indeed, in some of the higher valleys still exist the shrunken remnants of the former valley glaciers. These small glaciers, in latitude 65°, are, as far as known, the most northerly on the continent.

The high benches and terraces show that the western part of the peninsula has been elevated 600 or 800 feet in recent times. This elevation, however, antedates the maximum extension of the valley glaciers above described.

A. C. SPENCER: *The Physiography of the Copper River Basin, Alaska.*

The observations made by Messrs. A. C. Spencer and F. C. Schrader during the summer of 1900, establish the existence of a peneplain in the Chugatch Mountains, between the coast and the interior basin of the Copper and Chitina (Chittyna) rivers, and in the adjacent mountains at the heads of the Chitina, White and Tanana rivers.

The peneplain is now a dissected plateau with an elevation of more than 6,000 feet. Above it rise Mt. Blackburn and Mt. Natzahat to elevations of several thousand feet, the former, at least, being of extrusive origin. The age of this marked physiographic feature is not earlier than late Cretaceous nor later than Miocene. As the Eocene and Miocene are known to have been periods of baseleveling in western North America, it is probable that the peneplain is of Tertiary age. Whether it should be correlated with the Yukon plateau, considered as Miocene, or whether it is an older feature, has not been determined. It is of the same order of maturity as that plateau, and if it can be shown to be of the same age, its present altitude, several thousand feet above the adjacent portion of the great interior plateau of Alaska, shows that there has been faulting along the scarp which the St. Elias Range and its north-

western extension present towards the northeast.

F. L. RANSOME,
DAVID WHITE,
Secretaries.

BIOLOGICAL SOCIETY OF WASHINGTON.

The 332nd meeting was held on Saturday evening, January 12th.

W. H. Dall exhibited a skiagraph of a number of univalve mollusks, taken by a comparatively short exposure to the X-rays, and yet in spite of their calcareous nature showing the structure and form of the interior whorls very distinctly.

Vernon Bailey showed a specimen of a commercial skin of a grebe, saying that the grebes, as well as other water fowl, were being killed in great numbers in the shallow lakes of Oregon and Washington, particularly in the Klamath lakes, and that it was to be hoped that something might be done to protect these birds before it was too late.

William Palmer exhibited a series of specimens of the Cuban branching fern, *Gleichenia dichotoma*, describing its various stages of growth and comparing them with those of other species.

Frank K. Cameron spoke of 'The Formation of Black Alkali by Plants,' stating that it has long been believed that certain plant varieties cultivated on the arid soils of the West can cause an accumulation of sodium carbonate or 'black alkali.' This question has received some attention in the past, notably by Hilgard in California and Goss in New Mexico. An examination of the question in the laboratory of the Division of Soils, U. S. Department of Agriculture, indicates that in some cases there is an enormous accumulation of sodium in the leaves and stems of certain plants, more than sufficient to combine with the inorganic acids present and therefore in organic combination. On decay this material yields considerable amounts of alkali carbonates, which accumulate on account of the peculiar conditions of moisture and drainage which obtain for soils in arid regions.

The study has led incidentally to a discussion of the phenomena involved in the absorption of mineral salts by plants, from the point of view of the chemist; and lines of investigation

of possible value to the physiologist are tentatively suggested.

The detailed description of the study will appear at an early date in the 'Report of the Field Operations of the Division of Soils for 1900.'

T. H. Kearney discussed 'The Effect of Alkali Salts on the Growth of Seedling Plants,' describing a series of experiments conducted with the assistance of Dr. F. K. Cameron of the Division of Soils, Department of Agriculture, in order to ascertain the relative injurious effects upon plants of the salts characteristic of the so-called 'alkali' lands of the Western States. The salts employed were Na_2Co_3 , MgSO_4 , MgCl_2 , Na_2SO_4 , NaHC.O_3 , NaCl , CaCl_2 and CaS.O_4 , enumerated in the order of their toxicity so far ascertained; the first of these was the most harmful. Solutions were made in each case on the basis of a normal solution, that is, of the equivalent in grams per liter of the reacting weight of each salt. Young seedlings of *Lupinus albus* were selected for these experiments because of their sensitiveness to toxic substances, and because when proper conditions of germination are maintained their clear, straight radicles are admirably adapted to recording the rate of growth and other changes. The importance of continuing the investigations with other plants of widely different relationships was nevertheless emphasized.

One experiment was made with water heavily charged with CO_2 , in order to ascertain whether the H ions set free by the dissociation of the hypothetical H_7CO_3 might not prove toxic to the radicles. No harmful effect was obtained.

CaCo_3 and even MgCo_3 , added in powdered form to solutions of NaCl and Na_2SO_4 , tended to neutralize the injurious effects of those salts. Still more marked was the influence of CaSO_4 , when added to very toxic solutions of NaCl , in checking the action of the latter.

Solutions of many of those salts, *e. g.*, Na_2Co_3 , Na_4SO_4 and CaCl_2 , when of a dilution well below the toxic limit, served as actual stimuli to growth.

O. F. Cook presented a paper on 'The Origin of the Cocoa Nut,' prefacing his remarks with the statement that the origin of

many of our domesticated plants was unknown, and in other cases obscure. It was extensively believed that the cocoa nut was a native of Asia and introduced into tropical America, but the speaker showed by quotations from early Spanish writers that it was here at the time of the discovery of America. De Candolle's reasons for and against the American origin of the cocoa palm were critically reviewed and the conclusion reached that the objections to the American origin could be successfully combated.

Attention was drawn to the fact that, contrary to universal belief, the cocoa nut could not withstand exposure to salt water, and that it was not likely that so delicate a palm had received its wide distribution by any other than human agency. Finally Mr. Cook stated his belief that the cocoa palm had its origin in some of the valleys on the western slopes of the Andes and had travelled westward in company with man.

F. A. LUCAS.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

AT the 528th meeting, held January 19th, Mr. L. A. Fischer read 'A Brief History of the Office of Standard Weights and Measures.' He said the office had grown up under the necessity of providing uniform standards of weight and measure for the custom houses. In 1836 copies of these standards were ordered to be furnished to the several States. In 1866 the office was directed to supply copies of metric standards, and still later it has been charged with verifying polariscopes and instruments for electrical measurements.

Mr. A. L. Day, now of the Geological Survey, gave an interesting account of the development, organization and work of 'The Physikalische-Technische Reichsanstalt' of Berlin, in which he was engaged for several years.

Mr. S. W. Stratton, by invitation, spoke on 'The Proposed Standardizing Bureau,' giving a résumé of the plans and of the means taken to bring the subject before Congress, and reading from printed reports some of the arguments made before committees.

CHARLES K. WEAD,
Secretary.

THE LAS VEGAS SCIENCE CLUB.

THE second meeting of the Las Vegas Science Club was held January 8th. Mr. Frank Springer exhibited and commented upon some crinoids from the Burlington Limestone at Lake Valley, New Mexico. He also exhibited and discussed specimens of *Uintacrinus socialis*, Grinnell, which he had found beautifully preserved in the cretaceous of Western Kansas. He showed a number of plates to illustrate a memoir on this species, which will shortly be published in the *Memoirs* of the Museum of Comparative Zoology. The abundance and excellent preservation of the material had permitted him to determine many new facts regarding *Uintacrinus*; and after tabulating the characters of over 600 individuals it became evident that *U. socialis* of America and *U. westfalicus* of Europe were identical, the supposed specific distinctions being due to age and variation.

Mr. E. L. Hewett spoke on the ancient cliff-dwellings and communal buildings of the Pajarito district, New Mexico. He had for some years been engaged in the investigation of these, and presented a map showing their distribution, a number of plans and photographs, and a collection of objects obtained from the dwellings and burial mounds. The communal buildings of the Tchrega, Tsankiwi, Navakwee and Otow; mesas were described; the first of these was estimated to have contained nearly 1,500 rooms, being much larger than the buildings still in use at Taos. Mr. Hewett referred to the importance of preserving these ruins for systematic and careful examination, and the desirability of retaining as public property such important evidences regarding the early man of America as abounded throughout the district. To this end a bill is now pending in Congress, which provided for the retention of the district as a National Park.

T. D. A. C.

NEW YORK SECTION OF THE AMERICAN CHEMICAL SOCIETY.

A STATED meeting was held at the Chemists' Club, 108 West 55th Street, on January 11th, Dr. C. A. Doremus, presiding, and 53 members present.

Dr. Parker reported progress for the Committee appointed to confer with the Bureau of Combustibles in regard to the storage of acids.

The Chair reported that the revision of the By-Laws was in the hands of the Executive Committee in accordance with the action taken at the November meeting. A resolution offered by A. C. Hale was then read as follows :

Resolved, That the New York Section of the American Chemical Society herewith extends a most cordial invitation to the Society to celebrate the 25th anniversary of its foundation next April in New York City, and the Chairman of the New York Section is hereby authorized and directed to appoint such local committees as he may deem expedient in order to aid in perfecting arrangements for such celebration."

The resolution was unanimously approved and the Secretary was instructed to formally extend the invitation to the Society at large.

Dr. T. O'Connor Sloane then read his paper entitled, 'Notes on Spheroidal State Evaporation,' with experiments.

Dr. McMurtrie made a report on the Mid-winter meeting just held in Chicago, to the effect that it had been very successful, and the visiting members were well entertained. One hundred and thirty-nine members were registered. Numerous applications for membership in the Society had been entered as a result of the interest aroused.

DURAND WOODMAN,
Secretary.

DISCUSSION AND CORRESPONDENCE.

NOTE ON VEGETO-ELECTRICITY.

IN SCIENCE, September 8, 1900, is an abstract of a paper, by Dr. Waller, on 'The Electrical Effects of Light upon Green Leaves,' which recalls an experience noted in 1888 in my physical laboratory work. In June of that year I asked a student to determine the magnetic elements at a certain place, just under the outer ends of the long branches of a low Norway maple. He reported that the magnetometer was in such continual tremor and slight shifting about that it was impossible to make accurate readings. This continued for hours; and was quite noticeable again some days subsequently